

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented) A switch sheet comprising:

a spring member;

a resin sheet supported by an external surface of said spring member; and

a substantially rigid member positioned adjacent to said resin sheet, comprising a protrusion part protruding towards a center part of said spring member

wherein said substantially rigid member is supported by a side of said resin sheet facing the protrusion part.

2. (Currently Amended) A switch sheet comprising:

a spring member;

a resin sheet supported by an external surface of said spring member; and

a substantially rigid member, which is substantially planar, positioned adjacent to said resin sheet, comprising:

a protrusion part protruding towards a center part of said spring member, and

a circumferential portion adhered to a side of said resin sheet facing the protrusion part.

3. (Currently Amended) A switch sheet comprising:

a plurality of spring members positioned at defined intervals;

a resin sheet supported by external surfaces of said spring members; and
a substantially rigid member positioned adjacent to said resin sheet, comprising a plurality of protrusion parts, each of the protrusion parts protruding toward center parts of each of said spring members,

wherein said substantially rigid member is supported by a side of said resin sheet facing the plurality of protrusion parts.

4. (Currently Amended) A switch sheet comprising:

a resin sheet;

a spring member supporting said resin sheet on an external side, said spring member comprising a rotationally symmetrical axis; and

a substantially rigid member provided adjacent to said resin sheet, wherein:

said substantially rigid member is substantially planar;

said resin sheet comprises a flat portion surrounding a part that is supported by said spring member;

said substantially rigid member further comprises a protrusion part that protrudes toward said spring member and a circumferential portion that is secured to a side of said flat portion of said resin sheet facing the protrusion part; and

an axis along a direction of extension of said protrusion part is aligned with said rotationally symmetrical axis of said spring member.

5. (Original) A switch sheet according to claim 4, wherein said spring member is generally dome-shaped.

6. (Original) A switch sheet according to claim 5, wherein said external surface of said spring member is a convex side of said dome-shape.

7. (Currently Amended) A switch sheet according to claim 4, wherein ~~said substantially rigid member is substantially planar, and~~ said protrusion part protrudes substantially orthogonally from said substantially rigid member.

8. (Original) A switch sheet according to claim 4, wherein said resin sheet substantially covers said spring member.

9. (Original) A switch sheet according to claim 4, wherein said resin sheet extends outwardly beyond an external periphery of said spring member.

10. (Original) A switch sheet according to claim 4, wherein a circumferential portion of said substantially rigid member and said resin sheet are secured to each other.

11. (Original) A switch sheet according to claim 4, wherein a circumferential portion of said substantially rigid member and said resin sheet are secured to each other via an interposed plastic sheet.

12. (Original) A switch sheet according to claim 4, wherein said protrusion part is in contact with said resin sheet.

13. (Original) A switch sheet according to claim 4, wherein said substantially rigid member is made of sheet metal.

14. (Original) A switch sheet according to claim 4, wherein said protrusion part comprises a generally cylindrical shape with a diameter between 0.5 and 3.0 mm.

15. (Original) A switch sheet according to claim 4, wherein a cross-sectional shape of said protrusion part is, pan bottomed, trapezoidal, rectangular, cylindrical or triangular.

16. (Original) A switch sheet according to claim 13 wherein said substantially rigid member of sheet metal is shaped to be formed by a sheet metal pressing process.

17. (Original) A switch sheet according to claim 4, wherein said protrusion part is spaced apart from said resin sheet by a predetermined distance.

18. (Original) A switch sheet according to claim 4, wherein said resin sheet is adhered to said spring member by an adhesive.

19. (Currently Amended) A switch sheet for a multi-directionally operable switch having an execution key and a directional key, comprising:

a plurality of spring members positioned to correspond to said execution key and said directional key;

a resin sheet supported by external surfaces of said spring members; and

a substantially rigid member, which is substantially planar, positioned adjacent to said resin sheet, comprising:

a plurality of protrusion parts, each of the protrusion parts being formed in position so as to correspond to each center part of said spring members; and

a circumferential portion connected to said resin sheet.

20. (Original) A switch sheet according to claim 19 wherein said spring members are generally arranged in a cross shape, wherein one of said spring members is positioned at a center of said cross shape and others of said spring members are positioned at prescribed locations in four directions from said center.

21. (Original) A switch sheet according to claim 20 wherein said substantially rigid member forms an arrangement of a square with two lines therein, said two lines are perpendicular to each other and intersect in a center of said square.

22. (Original) A switch sheet according to claim 21 wherein said substantially rigid member is connected to said resin sheet only at four corners of said arrangement of a square with two lines therein, and has a plastic sheeting arranged therebetween.

23. (Currently Amended) A switch comprising:
a substrate comprising a fixed contact and a conducting circuit arranged thereon;
a spring member positioned on a surface of said substrate via said fixed contact;
a resin sheet supported by an external surface of said spring member and said surface of said substrate;

a substantially rigid member, which is substantially planar, positioned adjacent to said resin sheet and supported by a supporting member, comprising a protrusion part protruding towards a center part of said spring member; and

an actuator positioned adjacent to said substantially rigid member such that the actuator can depress said center part of said spring member via said substantially rigid member to enable conduction.

24. (Currently Amended) A switch comprising:
a substrate comprising a fixed contact and a conducting circuit arranged thereon;
a plurality of spring members positioned on a surface of the substrate via the fixed contact;
a resin sheet supported by external surfaces of said spring members and said surface of said substrate;

a substantially rigid member, which is substantially planar, positioned adjacent to said resin sheet and supported by a supporting member, comprising a plurality of protrusion parts protruding towards said spring members, and corresponding, respectively, to a center part of each of said spring members; and

an actuator positioned adjacent to said substantially rigid member such that it can depress said center part of said spring member via said substantially rigid member to enable conduction.

25. (Currently Amended) A switch comprising:

a substrate comprising a fixed contact and a conducting circuit arranged thereon;

a spring member having a rotationally symmetrical axis, and arranged on said substrate such that an external periphery thereof contacts said fixed contact and said conducting circuit is arranged along said rotationally symmetrical axis;

a resin sheet supported by an external surface of said spring member and said surface of said substrate;

a substantially rigid member, which is substantially planar, positioned adjacent to said resin sheet and supported by a supporting member; and

an actuator positioned adjacent to said substantially rigid member and substantially along said rotationally symmetrical axis, wherein:

if said actuator is moved along said rotationally symmetrical axis, said spring member is depressed via said substantially rigid member to contact said conducting circuit;

said resin sheet has a flat portion that is connected to said surface of said substrate; and

said substantially rigid member further comprises:

a cylindrically shaped protrusion part that protrudes toward said spring member, and
a circumferential part that is secured to said flat portion of said resin sheet,
wherein an axis of said cylindrically shaped protrusion part is aligned with said
rotationally symmetrical axis of said spring member.

26. (Currently Amended) A multi-directionally operable switch comprising:
a printed wired substrate having a fixed contact and a conducting circuit arranged
thereon;
a plurality of spring members generally arranged to form a cross shape, connected to said
printed wired substrate via said fixed contact, and supporting a resin sheet on external surfaces
thereof;
a substantially rigid member positioned adjacent to said spring members and connected to
said resin sheet by plastic sheeting;
said rigid member, which is substantially planar, comprising a plurality of protrusion
parts protruding towards said spring members and corresponding to a center part of each of said
spring members; and
an actuator positioned on an opposite side of said rigid member from said protrusion
parts.

27. (Previously Presented) A switch sheet according to claim 19, wherein the
circumferential portion of the substantially rigid member is connected to a side of said resin
sheet facing the protrusion part.

28. (Previously Presented) A switch according to claim 23, wherein a circumferential portion of the substantially rigid member is adhered to a side of said resin sheet facing the protrusion part.

29. (Previously Presented) A switch according to claim 24, wherein a circumferential portion of the substantially rigid member is connected to a side of said resin sheet facing the protrusion part.

30. (Previously Presented) A switch according to claim 25, wherein the circumferential portion of the substantially rigid member is adhered to a side of said flat portion of said resin sheet facing the protrusion part.

31. (Previously Presented) A multi-directionally operable switch according to claim 26, wherein a circumferential portion of the substantially rigid member is connected to a side of said resin sheet facing the protrusion part.

32. (New) A switch sheet according to claim 4, wherein said rigid member has a Young's Modulus of 70-200 GPa.

33. (New) A switch sheet according to claim 19, wherein said rigid member has a Young's Modulus of 70-200 GPa.

34. (New) A switch according to claim 23, wherein said rigid member has a Young's Modulus of 70-200 GPa.

35. (New) A switch according to claim 24, wherein said rigid member has a Young's Modulus of 70-200 GPa.

36. (New) A switch according to claim 25, wherein said rigid member has a Young's Modulus of 70-200 GPa.

37. (New) A switch according to claim 26, wherein said rigid member has a Young's Modulus of 70-200 GPa.

38. (New) A switch sheet according to claim 4, wherein said rigid member is made of stainless steel.

39. (New) A switch sheet according to claim 19, wherein said rigid member is made of stainless steel.

40. (New) A switch according to claim 23, wherein said rigid member is made of stainless steel.

41. (New) A switch according to claim 24, wherein said rigid member is made of stainless steel.

42. (New) A switch according to claim 25, wherein said rigid member is made of stainless steel.

43. (New) A switch according to claim 26, wherein said rigid member is made of stainless steel.